PROJECT NUMBER: 1307
PROJECT TITLE: Reconstituted Tobacco Development
PROJECT LEADER: R. G. Uhl
PERIOD COVERED: November, 1988

I. IMPROVED SHEET PROPERTIES

A. Objective:

Improve the physical characteristics and blend properties of reconstituted sheet materials.

B. Results:

1. ART Project - POL cigarettes to evaluate the acceptability of using half of the ART stems in pilot RL were mailed to panelists. Results should be available in January.

   The stems from six ART runs (236-9, 241-2) in which the ART filler was precased with PG/glycerine were blended together and incorporated in pilot RL at both the half and full utilization levels. These are being made into small-scale blended cigarettes for subjective screening. The control and full utilization sheets are available in POL quantities if precasing represents a subjective improvement warranting further testing.

2. Humectants - Glycerine-free RCB handsheets were made with several levels of supplemental sugars (isosweet and sucrose) to determine if this would improve the subjective properties. The subjective shortfall in previous test products appears more related to the absence of class tobacco casings when CT feedstock is replaced by stemmery scrap to produce a glycerine-free RCB, than it is to the removal of glycerine. These sheets will be screened in handmade 100% cigarettes.

   Semiworks survivability testing was completed on pilot RL sheets containing individual humectants (4% glycerine, 4% PG, 4% isosweet, or no humectant). Combined longs plus mediums exit the maker garniture showed no effect due to cutter OV, but had a strong direct relationship to maker OV. Piece size versus maker OV plots for three of the sheets (glycerine, isosweet, no humectant) were superimposed, indicating that moisture content alone governs RL survivability. The PG sheet showed lower survivability on an equal OV basis; correcting OV results for PG volatility in the OV test gave the PG sheet at least equal survivability on a constant moisture basis.

C. Plans:

1. Provide RL pilot plant support for the POL evaluation of ART stems in RL.

2. Expedite subjective evaluation of ART stems in RCB handsheets.

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3. Expedite subjective evaluation of glycerine-free RCB handsheets made with additional sugars.

II. SUBJECTIVE MODIFICATION OF RL

A. Objective: Improve or modify the subjective character of RL.

B. Results:

1. Dry Flavor Replacement - Flavor Development is continuing the analytical evaluation of vendor native extracts of liquid flavors following vendor modifications of the roasting process. These flavors will be evaluated in pilot RL when they become available.

2. Modified 150B - The Branson ultrasound processing unit was installed and tested. Size press nip rejection trials with Modified 150B size were initiated.

C. Plans:

1. Produce pilot RL to evaluate liquid flavors as available.

2. Complete trials to determine if ultrasound will break up Modified 150B size precipitates.

III. CIGARETTE PAPER DEVELOPMENT

A. Objective: Support development of proprietary low sidestream cigarette papers.

B. Results:

1. Handsheets - Cigarette paper handsheets were produced to evaluate experimental filler materials including magnesium carbonate, dolomite (a natural mineral combining calcium and magnesium carbonates), the Pfizer Multiflex MM fine (0.07 micron) calcium carbonate used at Maine, and Pfizer experimental Omega Fine (0.02 micron) calcium carbonate. The new laboratory size press was used to successfully size these handsheets and paper from the September University of Maine trials with potassium succinate (10% add-on).

   Experimental bilayer handsheets were also produced. Each layer was made at 25 gm/m^2 (half the normal sheet weight) and contained a different filler. The two layers were then pressure laminated using the hydraulic flat press.

2. Pilot Trials - A second set of trials was conducted on the University of Maine pilot paper machine. The absence of beater power load monitoring equipment made it difficult to reproduce the same degree of flax stock refining that gave the best results in September; Maine is addressing this problem

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and is also improving the mechanism for sheet pickup off of the paper machine wire. The Claflin refiner was successfully used for final freeness adjustment of the beaten stock; this required the use of a stock screen to remove fiber knots formed in the refiner. Moving the stock screen to immediately before the paper machine headbox (knot removal at the last possible moment) improved the appearance and runnability of the paper.

The new dandy roll did not produce sharp CD (cross directional) watermark lines; an etched roll installed in a third wet press position will be required for this purpose. The plain dandy was reinstalled for the remaining trials.

Subsequent beater adjustments resulted in the production of papers with Coresta porosities of 7-8 at a sheet weight of 40 gm/m^2 and containing 30% calcium carbonate (Pfizer Multiflex MM). Subsequent mechanical failure of the second press precluded production of significant bobbin quantities.

Maine is constructing and installing a secondary headbox to evaluate the feasibility of producing bilayer sheets. Trials for this purpose are scheduled for December. These trials will also evaluate the other equipment modifications made by Maine, and will allow the production of additional bobbins of low porosity paper for testing at R&D.

C. **Plans:**

1. Evaluate alternate (non-flax) fiber types as a means of improving cigarette paper properties.

2. Conduct a third set of trials at the University of Maine to evaluate the feasibility of producing bilayer papers.

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